

## Genetic Polymorphism of IL-8-251 Among Pediatric Patients With Urinary Tract Infection

**BACKGROUND AND OBJECTIVE:** Urinary tract infection (UTI) in children is characterized by a variety of clinical manifestations. A potential cause of different phenotypic responses is a genetically heterogeneous immune response. In view of the central role of interleukin-8 (IL-8) in the pathogenesis of UTI, the IL-8 gene polymorphism may be an important factor in determining the UTI phenotype. The objective was to study the frequency of polymorphic variants of the gene encoding IL-8 in children with UTI and the impact of polymorphism of IL-8 on the pathology.

**METHODS:** The study included 60 patients aged 3 to 18 years with UTIs. The control group consisted of 30 children without clinical symptoms of UTI and without anamnestic data about renal dysfunction. Materials for molecular genetic analysis were DNA samples, which were isolated from the urine. Nucleotide polymorphism detection estimated the carrier alleles of IL-8-251A, followed by determination of genotype A/A, A/T, and T/T. We performed statistical data processing by using the program package Statistica 6.0 (StatSoft, Tulsa, OK).

**RESULTS:** Nosologic groups were formed: 15 children with acute cystitis, 24 with acute pyelonephritis, and 21 with chronic pyelonephritis. Analysis of the distribution of genotypes demonstrated that the normal genotype of IL-8-251 TT was found in  $36.6\% \pm 6.2\%$  of patients and the heterozygous phenotype of IL-8-251 AT was found in  $60.0\% \pm 6.3\%$ . Compared with the control group, we detected a significant difference ( $P < .0005$ ) in the distribution of genotypes: Genotype IL-8 251 TT was found in  $66.6\% \pm 12.1\%$  of children in the control group, IL-8-251 AT in  $33.4\% \pm 12.1\%$ . A positive association between the genotype IL-8-251 AT and UTI occurrence was established:  $RR = 2.8$ ;  $\chi^2 = 9.6$ ,  $P < .0002$ . Analysis of gene polymorphisms of IL-8 (251 AT) based on the clinical forms of UTI showed that the most common ( $71.4\% \pm 9.8\%$ ) was found in patients with chronic pyelonephritis ( $P < .0005$ ), whereas in patients with cystitis it was found in  $46.6\% \pm 12.8\%$ .

**CONCLUSIONS:** Heterozygous genotype IL-8-251 AT can be used as a criterion for the onset and course of UTI. Identification of prognostic criteria of UTI phenotypes in children, taking into account the genotypic polymorphism of IL-8, requires additional study.

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## Renal Bladder Ultrasonography and Late 6-Month DMSA Scan Screening for High-Grade Vesicoureteral Reflux After First Febrile Urinary Tract Infection in Infants Aged <1 Year

**BACKGROUND AND OBJECTIVE:** The best approach for radiologic investigation in a child after the first febrile urinary tract infection (UTI) remains contentious. Many advocates agree that the detection of high-grade vesicoureteral reflux (VUR) is important because of the increased risk of recurrent UTI and renal scars. The objective was to study the ability of renal bladder ultrasonography (RBUS) and late 6-month technetium-99 dimercaptosuccinic acid (DMSA) renal scans to detect high-grade VUR after first febrile UTI in infants aged <1 year.

**METHODS:** A total of 387 infants aged <1 year with first febrile UTI who completed the diagnostic follow-up of RBUS, voiding cystourethrography (VCUG), and late 6-month DMSA scan were enrolled in the study. The ability of RBUS and late 6-month DMSA scan to detect high-grade VUR, including cost and benefit, was assessed.

**RESULTS:** RBUS findings were abnormal in 95 (24.5%) infants. VUR was found by VCUG in 79 (20.4%) infants, which was high grade (grade IV–V) in 8 (2.1%) infants. Abnormal renal parenchyma, including renal scars, was identified by late 6-month DMSA scan in 22 (5.7%) infants. The sensitivity of abnormal RBUS and late 6-month DMSA scans in detecting high-grade VUR was 50% and 87.5%, respectively, and unnecessary VCUG was reduced by 75.5% and 94.3%, respectively. Abnormal RBUS had higher sensitivity in detecting abnormal DMSA scan than normal RBUS (68.2% and 31.8%, respectively).

**CONCLUSIONS:** Fifty percent of high-grade VUR and 31.8% of abnormal late 6-month DMSA scans were not detected by RBUS screening after a first febrile UTI in infants. Although abnormal late 6-month DMSA scans had higher sensitivity and specificity in detecting high-grade VUR and the ability to detect renal scars, the benefit of this method was limited because of its high cost and radiation exposure.

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## Molecular Basis of $\alpha$ -Thalassemia in Qatari Pediatric Population

**BACKGROUND AND OBJECTIVES:**  $\alpha$ -Thalassemia is a microcytic anemia characterized by the downregulation of  $\alpha$ -globin synthesis. Premature destruction of red blood cells in the bone marrow ensues, resulting in deficient erythropoiesis. Mutations in the globin gene resulting in quantitative or structural changes in the globin chain can be caused by

sequence variations, deletions of  $\geq 1$  of the structural genes, and deletions extending beyond the globin cluster. The frequency and types of  $\alpha$ -thalassemia mutation among children and adolescents in the state of Qatar are not known. The objectives were to study the molecular basis of the  $\alpha$ -thalassemia gene among Qatari children and adolescents to determine the frequency and types of  $\alpha$ -thalassemia mutations in the pediatric population.

**METHODS:** Qatari children between the ages of 5 and 15 years exhibiting laboratory findings suggestive of microcytic anemia were pooled from Qatari public schools. Those with a hemoglobin of  $< 12$  g/dL, a mean corpuscular volume of  $< 80$  fL, iron studies within the normal range, and a hemoglobin electrophoresis that ruled out  $\alpha$ -thalassemia were narrowed down to a group of 150 children and adolescents with suspected  $\alpha$ -thalassemia. The patients were screened for deletions in  $-\alpha 3.7$ , the most common  $\alpha$ -thalassemia deletion. Subsequent screenings for deletions in  $\alpha$ -5nt,  $\alpha$ -poly-A1 ( $\alpha$ -T-Saudi), and  $\alpha$ -poly-A2,  $\alpha$ -thalassemia deletions prevalent in neighboring Middle Eastern countries, was also performed.

**RESULTS:** Of the anemic subjects, 37.9% tested positive for the  $-\alpha 3.7$  deletion, 4.5% tested positive for the  $\alpha$ -poly-A1 deletion, and 1.5% tested positive for the  $\alpha$ -5nt mutation. None of the children exhibited any changes in  $\alpha$ -poly-A2. We also tested 59 samples that revealed no mutations initially. Among 59 samples, 43 showed normal sequencing for  $\alpha 1$  and  $\alpha 2$  and 16 showed no result. So we did multiplex ligation-dependent probe amplification for these 16 samples: 2 samples showed compound heterozygous (HT-RW) and (HT-20.5) (12.5%), 2 samples showed compound heterozygous (HT-RW) and (HT-20.5) (12.5%), and 2 samples showed African polymorphism (12.5%).

**CONCLUSIONS:** Our results suggest that a significant number of the Qatari pediatric population exhibits mutational changes responsible for the increasing prevalence of  $\alpha$ -thalassemia in the population. Of the children pooled, 48% exhibited mutations suggestive of  $\alpha$ -thalassemia. This suggests the possibility of other existing mutations in the Qatari pediatric population that are yet to be elicited. Additional testing of the 59 samples revealed new mutations. We are exploring new mutations of  $\alpha$ -thalassemia in the Qatari population.

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## Affections, Disaffections, and Relationship Abuse in Adolescence

**BACKGROUND AND OBJECTIVE:** Dating violence is a socially relevant problem among adolescents and young adults and has begun to receive particular attention by the scientific community over the past 2 decades. It is not limited to the sexual dimension, and it may involve multiple and varied forms including physical and psychological abuse, necessitating different strategies for prevention and intervention. The objective was to identify the factors that influence dating violence among high school students and analyze the effect of contextual dating variables in the development of strategies to prevent conflict and violence in romantic relationships.

**METHODS:** In a cross-sectional, descriptive, and correlational study, we administered questionnaires consisting of socio-demographic and contextual characterizations of dating, the Conflict in Adolescent Dating Relationships Inventory and the Attitudes Toward Dating Violence Scale, to 243 adolescents attending Portuguese public high schools. Approval was requested from the Portuguese General Directorate for Innovation and Curriculum Development, and authorization was given by the council of schools. Consent was obtained from teenagers and their parents.

**RESULTS:** Of the teenagers surveyed, 40.7% were  $> 17$  years old, and 44.1% were girls. They inhabited mainly rural areas, most were Portuguese, and a majority were in 10th grade. More than half lived with their parents (56.0%). Most were Catholic. Almost all participants were dating or had dated. There were statistically significant differences in the rates of all kinds of violence, especially among students who had sexual intercourse. The source of information about sexuality influenced some dimensions of violence, and male sexual violence stood out. We found statistically significant differences in all kinds of violence, by gender (higher in boys) and by religion, and according to which partner initiated sexual activity. The type of violence was mostly psychological. The behaviors of conflict victimization overlapped with those of perpetration, and the boys showed more strategies of conflict, while girls and the older adolescents had more no abusive strategies of their own. The conflict behaviors were significant in adolescents who initiated sexual activity earlier and not abusive strategies when sexuality is spoken between lovers or friends.

**CONCLUSIONS:** The results point to the need to integrate the topic of dating violence in the education and training of adolescents, using active methods, with participation of all stakeholders in the process (teens, parents, teachers, and health professionals) to help adolescents develop healthy relationship skills.

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